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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 836,351	04/18/2001	Jang-Jin Yoo	8733.421.00	8728

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EXAMINER

RUDE, TIMOTHY L

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/836,351

Applicant(s)

YOO ET AL.

Examiner

Timothy L Rude

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 3,6-11,14,15,17-36 and 38-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,12,13,16 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received

Attachments

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Supplemental |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

1. Claims 3, 6-11, 14, 15, 17-36, and 38-56 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Claim Objections

2. Claim 37 is objected to because of the following informalities: The recitation "common lines" should read -- common electrodes -- . Appropriate correction is required. For examination purposes, the recitation "common lines" will be interpreted as -- common electrodes -- .

Double Patenting

3. Claims 1, 2, 4, and 5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of copending Application No. 09/758,566. Although the conflicting claims are not identical, they are not patentably distinct from each other because they pertain to the use of dielectric structures to improve viewing angle.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by
Watanabe et al (Watanabe) USPAT 6,259,503 B1.

As to claim 1, Watanabe discloses in the first embodiment (col. 5, line 51 through col. 8, line 5 and Figures 11, 12, and 16), an IPS-LCD device, comprising: first, 101, and second, 201, substrates opposing each other; a scanning (Applicant's gate) line, 108, on the first substrate; a signal (Applicant's data) line, 102, perpendicular to the gate line; a thin film transistor, 109, at a crossing portion between the gate and data lines; a common electrode (portion running left to right in Figure 11 Applicant's common line)

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bottom in Figure 11), 103, electrically connected to the common line, wherein the common electrodes are spaced apart from each other; a plurality of pixel electrodes, 104, alternately arranged with the plurality of common electrodes, wherein each pixel electrode is spaced apart from an adjacent common electrode; a plurality of insulator films (Applicant's dielectric protrusions), 105 and 106, between the first and second substrates; and a liquid crystal layer, 301, between the first and second substrates, wherein the liquid crystal layer and the dielectric protrusion have different dielectric constants as evidenced by Figure 16 and Table 2 (col. 7, lines 31-42).

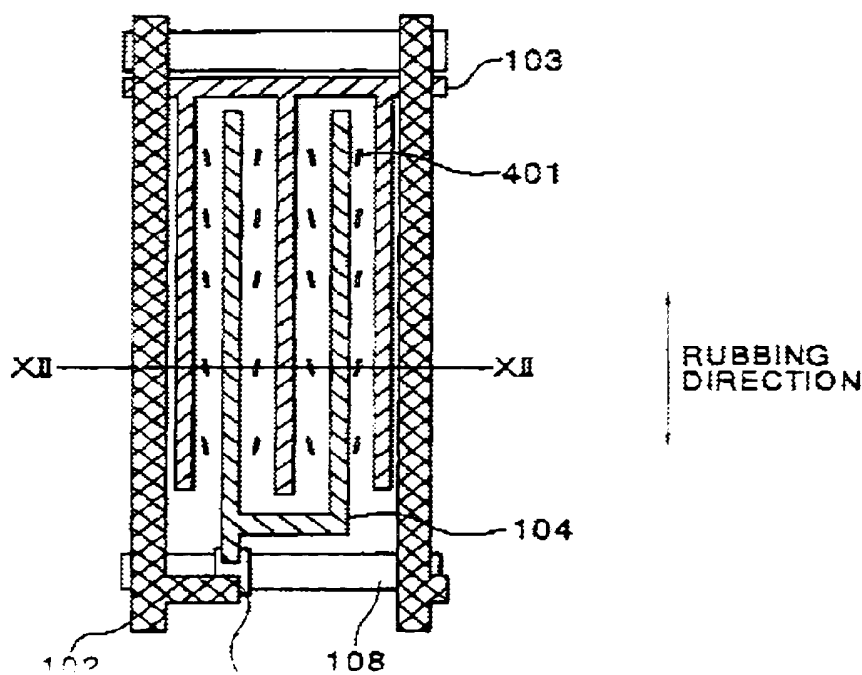
FIG. 11

FIG. 12

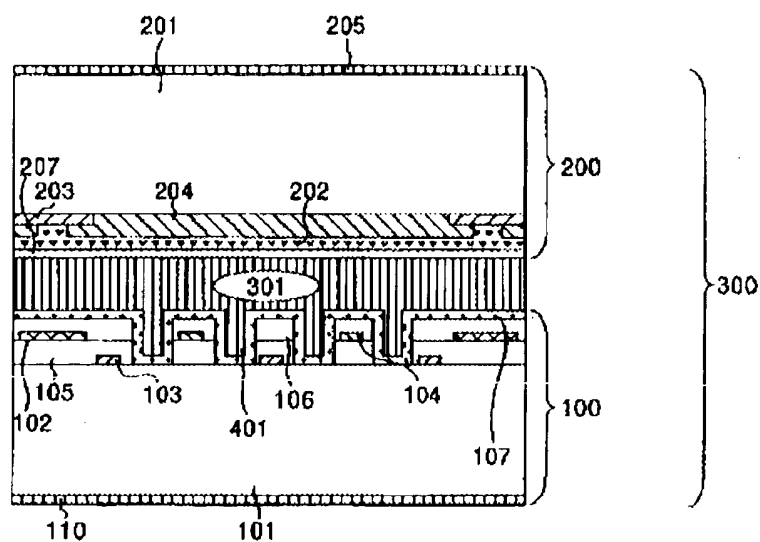
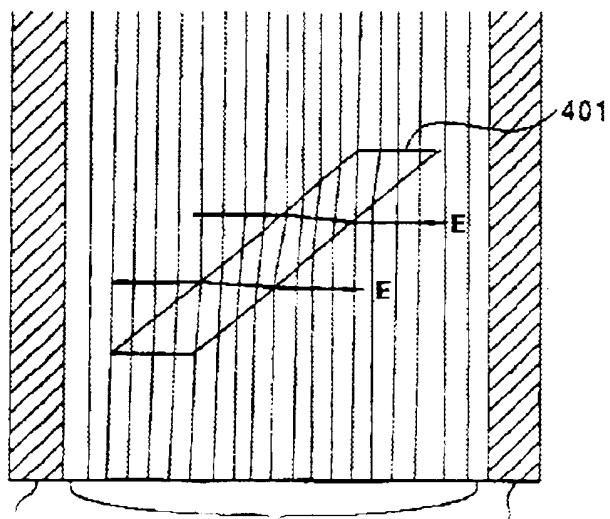


FIG. 16



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As to claim 2, Watanabe discloses the dielectric protrusion has a smaller dielectric constant than the liquid crystal layer in Table 2 (smaller than major axis, col. 7, lines 31-42).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-5 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Kurihara et al (Kurihara) USPAT 6,335,780 B1.

As to claims 4 and 5, Watanabe discloses the device of claim 1.

Watanabe does not explicitly disclose dielectric protrusions made of an organic material, and more specifically, Watanabe does not explicitly disclose dielectric protrusions made of a photoresist (photoresist is an organic material, examples given in Kurihara col. 1, lines 44-45).

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Kurihara teaches the use of photosensitive resin (a dielectric) to produce protrusion structures (col. 8, lines 10-16) to achieve axially symmetrically aligned liquid crystal molecules (Abstract) that improve viewing angle performance of the display.

Kurihara is evidence that those of ordinary skill in the art at the time the claimed invention was made would consider the use of a photoresist, which is an organic material and a dielectric, to be suitable for the intended purpose of forming dielectric protrusions in a liquid crystal display. Kurihara is also evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use an organic photoresist to produce protrusion structures that achieve axially symmetrically aligned liquid crystal molecules for improved viewing angle performance of said display.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Wantanabe with the dielectric protrusions of organic photoresist to produce protrusion structures that achieve axially symmetrically aligned liquid crystal molecules for improved viewing angle performance of a liquid crystal display.

As to claim 37, Wantanabe discloses the device of claim 1 wherein dielectric protrusions are disposed on the pixel electrodes and common electrodes (Applicant's lines).

Wantanabe does not explicitly disclose dielectric protrusions in an alternating pattern

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Kurihara teaches the use of protrusions in a grid pattern and in a checkered pattern (col. 2, lines 16-20) (Applicant's alternating pattern) to achieve axially symmetrically aligned liquid crystal molecules for improved viewing angle performance of said display (Abstract).

Kurihara is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use an alternating pattern to achieve axially symmetrically aligned liquid crystal molecules for improved viewing angle performance of said display.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Wantanabe with the alternating pattern of Kurihara to achieve axially symmetrically aligned liquid crystal molecules for improved viewing angle performance of said display.

6. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Kawano et al (Kawano) USPAT 6,337,726 B1.

As to claims 12 and 13, Wantanabe discloses the device of claim 1.

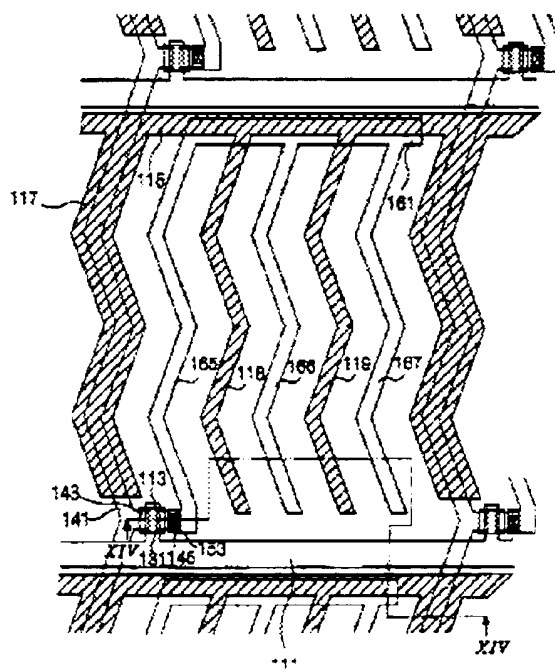
Wantanabe does not explicitly disclose pixel electrodes of ITO or ZTO, and Wantanabe does not explicitly disclose a common electrode of Cr, Al, Mo, Ta, W, Sb or alloys thereof.

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Kawano teaches the use of AI for pixel electrodes and opposite electrodes (Applicant's common electrodes) (col. 15, lines 38-44) in an in-plane switched (IPS) LCD that may optionally be made of ITO.

Kawano is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use ITO and/or Al in an IPS LCD as art recognized materials suitable for the purpose of forming pixel electrodes and common electrodes to control the display pixels.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Wantanabe with the ITO and/or Al materials of Kawano as suitable for the purpose of forming pixel electrodes and common electrodes (MPEP 2144.07) to control the display pixels.



16. 2B

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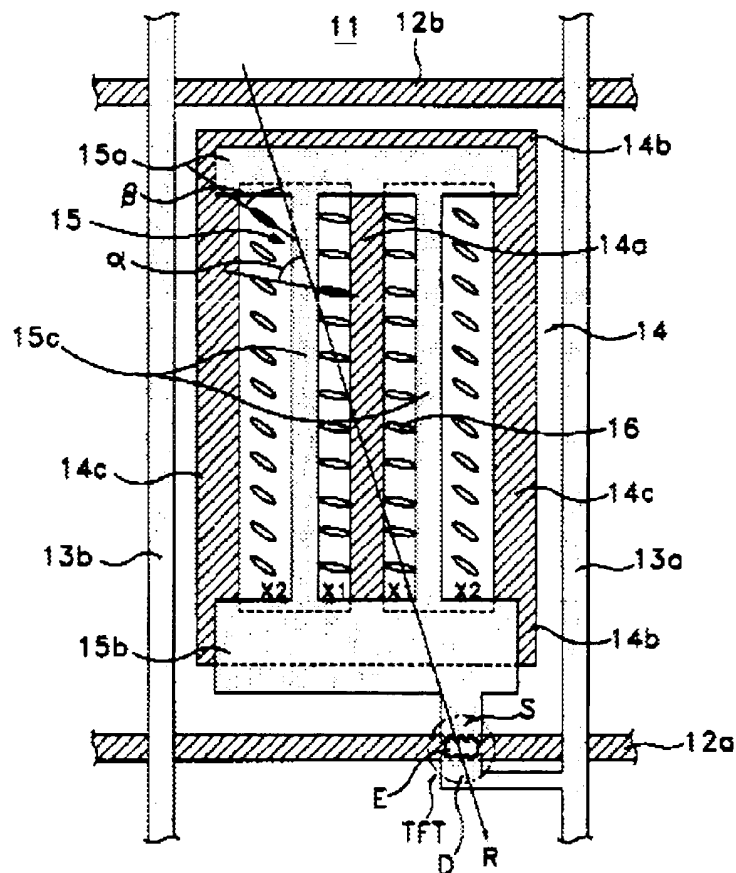
7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Lee et al (Lee) USPAT 6,476,900 B1.

As to claim 16, Watanabe discloses the display of claim 1.

Watanabe does not explicitly disclose the use of liquid crystal with negative dielectric anisotropy wherein the molecules would line up parallel to the IPS LCD electrodes when said electrodes are electrically on.

Lee teaches in Figure 2 an IPS LCD with negative or positive dielectric anisotropy (col. 2, lines 25-26), and Lee teaches the rubbing direction is changed to be compatible with the anisotropic characteristics of the liquid crystal material (col. 3, lines 47-65) to achieve proper switching of the liquid crystal material. Note that some of the angles are improperly expressed, however, one of ordinary skill in the art of liquid crystals would understand that the LC molecules of negative dielectric anisotropy are aligned substantially perpendicular to the electrodes in the off state.

FIG.2



Lee is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use negative dielectric anisotropy and proper alignments to comprise an IPS LCD with satisfactory switching characteristics and reduced color shift (Abstract).

liquid crystals at the time the invention was made to modify the LCD of Wantanabe with

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the negative dielectric anisotropy and proper alignments of Lee to comprise an IPS LCD with satisfactory switching characteristics and reduced color shift.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

Timothy L Rude
Examiner
Art Unit 2871



TLR
May 18, 2003

